

Idaho Standards for Mathematics Teachers

All teacher candidates are expected to meet the Idaho Core Teacher Standards and the standards specific to their discipline area(s) at the “acceptable” level or above. Additionally, all teacher candidates are expected to meet the requirements defined in State Board Rule (08.02.02: Rules Governing Uniformity).

The following knowledge, disposition, and performance statements for the Mathematics Teacher Standards are widely recognized, but not all-encompassing or absolute, indicators that teacher candidates have met the standards. It is the responsibility of a teacher preparation program to use indicators in a manner that is consistent with its conceptual framework and that assures attainment of the standards.

Standard 1: Knowledge of Subject Matter - The teacher understands the central concepts, tools of inquiry, and structures of the content area(s) taught and creates learning experiences that make these aspects of subject matter meaningful for learners.

Knowledge

1. The teacher understands the historical and cultural significance of mathematics and the changing ways individuals learn, teach, and do mathematics.
2. The teacher understands concepts of algebra.
3. The teacher understands the major concepts of geometry (Euclidean and non-Euclidean) and trigonometry.
4. The teacher understands basic concepts of number theory.
5. The teacher understands concepts of measurement.
6. The teacher understands the concepts of limit, continuity, differentiation, integration, and the techniques and application of calculus.
7. The teacher understands the techniques and applications of statistics and data analysis (e.g., random variable, distribution functions, and probability).

Disposition

1. The teacher appreciates the historical, cultural, and current development of mathematical thought.

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2. The teacher appreciates the importance of coherent and logical development of students' mathematical knowledge.
3. The teacher recognizes how students construct their own knowledge of mathematics.

Performance

1. The teacher incorporates the historical perspective and current development of mathematics in teaching students.
2. The teacher applies concepts of number, number theory, and number systems.
3. The teacher uses numerical computation and estimation techniques and applies them to algebraic expressions.
4. The teacher applies the process of measurement to two- and three-dimensional objects using customary and metric units.
5. The teacher uses descriptive and inferential statistics to analyze data, make predictions, and make decisions.
6. The teacher uses concepts and applications of graph theory, recurrence relations, matrices, and combinatorics.

Standard 2: Knowledge of Human Development and Learning - The teacher understands how students learn and develop, and provides opportunities that support their intellectual, social, and personal development.

Standard 3: Modifying Instruction for Individual Needs - The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to learners with diverse needs.

Standard 4: Multiple Instructional Strategies - The teacher understands and uses a variety of instructional strategies to develop students' critical thinking, problem solving, and performance skills.

Knowledge

1. The teacher knows how to formulate and pose problems, how to access a large repertoire of problem-solving strategies, and how to use problem-solving approaches to investigate and understand mathematics.
2. The teacher understands the role of axiomatic systems and proofs in different branches of mathematics as it relates to reasoning and problem solving.
3. The teacher knows how to frame mathematical questions and conjectures.
4. The teacher knows how to make mathematical language meaningful to students.

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5. The teacher understands inquiry-based learning in mathematics.
6. The teacher knows how to communicate concepts through the use of mathematical representations (symbolic, numeric, graphic, verbal, and concrete models) .
7. The teacher understands the appropriate use of technology in teaching and learning of mathematics (e.g., graphing calculators, dynamic geometry software, and statistical software)
8. .

Disposition

1. The teacher recognizes that struggling with mathematical problems, making false starts, and rejecting hypotheses are part of the problem-solving process.
2. The teacher appreciates the power of communication and representation for learning mathematical ideas.
3. The teacher appreciates the power of an appropriate balance of conceptual knowledge and computational skills.
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Performance

1. The teacher formulates and poses problems, uses different strategies to solve problems to verify and interpret results, and uses problem-solving approaches to investigate and understand mathematics.
2. The teacher uses both formal proofs and intuitive, informal exploration.
3. The teacher develops students' use of standard mathematical terms, notations, and symbols.
4. The teacher communicates mathematics through the use of a variety of representations.
5. The teacher engages students in mathematical discourse by encouraging them to make conjectures, justify hypotheses, and use appropriate mathematical representations.
6. The teacher uses technology appropriately to develop students' understanding (e.g., graphing calculators, dynamic geometry software, and statistical software).

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Standard 5: Classroom Motivation and Management Skills - The teacher understands individual and group motivation and behavior and creates a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Standard 6: Communication Skills - The teacher uses a variety of communication techniques including verbal, nonverbal, and media to foster inquiry, collaboration, and supportive interaction in and beyond the classroom.

Standard 7: Instructional Planning Skills - The teacher plans and prepares instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

Standard 8: Assessment of Student Learning- The teacher understands, uses, and interprets formal and informal assessment strategies to evaluate and advance student performance and to determine program effectiveness.

Disposition

1. The teacher is committed to valuing students' reasoning and use of alternative representations and algorithms.

Performance

1. The teacher assesses students' mathematical reasoning.

Standard 9: Professional Commitment and Responsibility - The teacher is a reflective practitioner who demonstrates a commitment to professional standards and is continuously engaged in purposeful mastery of the art and science of teaching.

Standard 10: Partnerships- The teacher interacts in a professional, effective manner with colleagues, parents, and other members of the community to support students' learning and well-being.

Standard 11: Connections among Mathematical Ideas - The teacher understands significant connections among mathematical ideas and the application of those ideas within mathematics, as well as to other disciplines.

Knowledge

1. The teacher has a broad base of knowledge and understanding of mathematics beyond the level at which he or she teaches to include algebra, geometry and measurement, statistics and data analysis, and calculus.
2. The teacher understands the interconnectedness between strands of mathematics.
3. The teacher understands mathematical modeling as a way to understand the world (e.g., in natural science, social science, business, and engineering).

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4. The teacher understands the relationship between geometric concepts and real-life constructs.

Disposition

1. The teacher recognizes the critical linkages between mathematics and other fields.

Performance

1. The teacher uses mathematical modeling to solve problems from fields such as natural science, social science, business, and engineering.
2. The teacher uses geometric concepts and relationships to describe and model mathematical ideas and real-life constructs.
3. The teacher uses algebra to describe patterns, relations, and functions in meaningful contexts.